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Quality of Life: Meaning, Measurement, and Models

Elyse W. Kerce



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FOREWORD

This report is a review of the literature pertaining to the theory and assessment of quality of life, and is intended to provide background technical information for the development of quality of life assessments in the Department of the Navy.

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SUMMARY

Problem

The Department of the Navy expends significant resources on programs intended to enhance quality of life for military members and their families in order to attract, motivate and retain qualified personnel. Despite that commitment, there has been no systematic effort to monitor quality of life, and there has been little consensus regarding how quality of life should be measured.

Objective

The objective of this report is to integrate the literature describing previous efforts to define and measure quality of life, and to document attempts to model the evaluative processes employed by individuals.

Background

In recent years, the phrase "quality of life" has become part of the vocabulary of social scientists, advertisers and the man in the street, despite the fact that there has been little consensus about how the concept should be defined or measured. Early attempts to determine life quality depended almost entirely upon the analysis of statistical indicators. In the 1970s, however, representative samples of the American public were interviewed to determine their subjective evaluations of their life quality, and similar assessments continue throughout most of the industrialized nations.

Approach

The literature related to quality of life was reviewed to summarize the approaches to quality of life assessment that have yielded interpretable and practical information for decision makers. Quality of life was defined as the degree to which the experience of an individual's life satisfies that individual's wants and needs, both physical and psychological.

The advantages of both objective and subjective approaches to quality of life assessment were compared, along with findings from previous research describing the relationships between the two types of indicators. The merits of commonly-used measures of subjective quality of life (SQL) were reviewed, as were conceptual models proposed by a number of researchers.

Discussion

The argument was made that quality of life assessments that include both subjective and objective indicators will provide the most pertinent information for planning and resource allocation. The notion of life domains is useful for structuring a quality of life assessment instrument, allowing for analyses of differences among demographic subgroups that are thought to combine domain satisfactions in unique ways. Twelve domains representing concerns applicable to a wide population were identified.

Recommendations

The following recommendations were made for conducting a cyclical quality of life assessment:

- A systematic and recurring assessment of the quality of life of military members and families should be conducted.
- Subjective data should be collected using a self-administered questionnaire.
- The survey sample should be drawn so that respondents are representative of the cultural diversity within the organization.
- Smaller subgroups of interest should be over-sampled to assure that sufficient responses are obtained for comparative analysis.
- Questionnaire items should be written to tap affect, cognition, and cognitive comparisons for each life domain and for life as a whole.
- The following life domains should be assessed: financial status and standard of living, housing, health and personal safety, marriage/partnership, family life, relations with relatives, relations with friends, neighborhood/community, leisure and recreation, work, self-efficacy and personal development, and national issues.
- Items soliciting objectively-verifiable responses should also be included for each domain.
- The assessment instrument should include an abbreviated social desirability scale and a measure of mood.
- Environmental data obtained through alternate methods should be included in development of a predictive model.
- An effort should be made to operationalize multiple measures of behavior and behavioral intentions.
- Data obtained through recurring assessment of SQL should be used to develop and update a predictive model of quality of life needs that is sensitive to changing demographics and conditions.

CONTENTS

INTRODUCTION	1
Problem.....	1
Objective.....	1
Background.....	1
DEFINING QUALITY OF LIFE	2
Objective Approaches	2
Subjective Approaches	3
The Affective Component.....	4
The Cognitive Component	5
The Relationship Between Objective and Subjective Indicators	6
Combining Objective and Subjective Measures.....	7
MEASURING QUALITY OF LIFE	7
Domain Measures	8
Global Measures	9
Validity and Reliability of Subjective Measures	11
Validity	11
Reliability	12
Validity and Measurement Error of Objective Indicators.....	13
Bias and Correlated Error	13
Mood	14
QUALITY OF LIFE MODELS.....	14
Conceptual Models.....	15
Models for Combining Domain Satisfactions	16
Structural Equation Models of Affect and Cognition in Global Assessments	17
PREDICTING GLOBAL QUALITY OF LIFE	17
Domain Evaluations	17
Demographic Variables and Individual Differences.....	18
APPLICATIONS	19
Health Care	20
Social Policy and Planning	20
Program Evaluation and Needs Assessment	21
Military Applications.....	22
DISCUSSION	23
RECOMMENDATIONS	25
REFERENCES	27

INTRODUCTION

Problem

An all-volunteer U.S. military force has emphasized the need to assure that the life quality experienced by military members and their families will attract, motivate, and retain qualified personnel. Sensitive to this need, each of the service branches expends significant resources on programs intended to enhance quality of life. Despite this commitment, there has been no systematic effort to monitor quality of life in the military. Further, there has been little consensus regarding how quality of life should be measured or, indeed, how the concept should be operationalized.

Objective

The objective of this report is to integrate the literature describing previous efforts to define and measure quality of life, and to document attempts to model the evaluative processes employed by individuals when reporting levels of life quality.

Background

Although the term "quality of life" is relatively recent, the concept of public happiness has been popular at various periods throughout history. Philosophers have long considered happiness to be the highest good and ultimate motivation for human action. Writings of the 18th century were filled with discussions of the nature of happiness and the conditions of its achievement and, in 1725, Francis Hutcheson laid the foundation for utilitarian doctrine, arguing that the best action was that which accomplishes the greatest happiness for the largest number. The implications for the government's role were widely accepted. Happiness became the central concern of political economists, who assumed that it was a measurable quantity and that governments could be judged in terms of their success in creating public happiness (Campbell, 1981). Even though the word "happiness" seems to have gone out of style, the desire to learn something about the way people experience their lives has not, as can be seen by a resurgence in research investigating "well-being" or "quality of life."

Little is known about the exact origin of the term "quality of life"; however, McCall (1975) suggested that popular usage seems to date back to 1961 when the phrase was used in a speech given by President Lyndon Johnson. Although originally the term was used most often in conjunction with such concerns as environmental pollution or urban deterioration, the context within which it is now used is much broader. Quality of life has also become a multi-national priority and, as Szalai (1980) remarks, one is likely to encounter concerns with "qualite de vie" in France or "qualitat des lebens" in Germany as frequently as quality of life is discussed in this country.

Szalai (1980) also remarked upon the similarity between the current concept of quality of life and the age-old "how are you?" type of question commonly used in many different societies as a salutation to express an interest in the health, welfare and prosperity (i.e., quality of life) of the person addressed. What is remarkable about this question, Szalai suggests, is that, first, people are willing to answer such questions and, second, that it gives proof of the capability of human beings to keep in evidence the life they are living and the conditions of their existence, and to form an integral judgment about their lives (pp. 11-12).

This report will discuss the various ways in which quality of life has been defined, describe objective and subjective orientations, and summarize what is known about the relationship between objective and subjective measures of quality of life. Various measures that have been used to assess quality of life will be reviewed, with a discussion of their utility, validity, and reliability. Models that have been developed to explain the processes by which individuals make a judgment about the quality of their lives will be discussed. Relationships between perceived quality of life and other variables will be the subject of the next section, followed by a summary of the applications of quality of life research. Finally, recommendations for conducting quality of life research with military personnel will be presented.

DEFINING QUALITY OF LIFE

The term "quality of life" overlaps but is not synonymous with a number of terms, including "well-being," "social indicators," and "way of life" among others (Andrews, 1980). Many investigators in this area have adopted the phrase "level of well-being" as one that seems to express the quality of life concept most succinctly. However, the definition that will be referred to throughout this report is a somewhat broader one proposed by Rice (1984, p 157):

The quality of life is the degree to which the experience of an individual's life satisfies that individual's wants and needs (both physical and psychological).

Much of the debate about how quality of life should be defined has centered around subjective versus objective approaches. Rice further defines objective quality of life (OQL) as

...the degree to which specified standards of living are met by the objectively verifiable conditions, activities, and activity consequences of an individual's life.

and subjective quality of life (SQL) as

...a set of affective beliefs directed toward one's life.

Thus, inherent in the objective/subjective debate is the question of who should determine how well the individual's wants and needs have been satisfied. The objective approach depends upon the judgment of an elite who have specified standards that they believe will satisfy human needs. The subjective approach allows individuals to define for themselves the quality of their lives and recognizes the possibility of a multitude of different orientations (Blishen & Atkinson, 1980). In general, governmental agencies have preferred objective approaches while survey organizations with academic affiliations typically have adopted subjective approaches.

Objective Approaches

Western societies have compiled a flood of national and regional statistics that are considered essential for the operation of a modern society, and that have been used as indicators of the well-being of their people. The bulk of these data relate to material aspects of life--to income, expenditures, savings, and the production of goods and services. While such monetary indicators are attractive because they are relatively easy to count, many investigators have argued against using them as the ultimate criteria against which quality of life should be assessed (Campbell, 1976).

Consequently, there has been a continuing effort to develop noneconomic "social indicators." Nearly all of these social indicators describe events, behaviors, or characteristics of individuals that are reported through governmental agencies of one type or another. Most people are familiar with statistics of this type that report the incidence of marriages, divorces, births, crimes, college graduates, and employed women. None of these statistics depends upon the individual's description of his or her own life, and thus they are also objective indicators.

While quality of life is experienced by individuals, it is closely related to the quality of life of social groups, communities, and nations. The aggregation of individual life experiences to produce a summary statement of the quality of life of a nation is one of the most difficult problems of quality of life research (Solomon et al., 1980). Large multi-national quality of life research programs, such as that of United Nations Educational, Scientific and Cultural Organization (UNESCO) and the member countries of the Organization for Economic Cooperation and Development (OECD), have thus far concentrated on the development of objective indicators. This work is predicated on the assumptions that a single notion of well-being can be broadly applicable to all countries, and that identical measures and measurement techniques can be used in the different countries (Verwayen, 1980). The OECD member countries have developed a slate of social concerns and are seeking to develop social indicators to measure each of them. This group has defined a social indicator as a direct and valid statistical measure that monitors levels and changes over time in a fundamental social concern. A social concern is defined as an identifiable and definable aspiration of fundamental and direct importance to human well-being, such as literacy for example. Working groups, each composed of individuals from several countries, have been assigned to each concern with the task of developing indicators for that concern. This and similar multi-national efforts represent the state of the art in social indicators research.

Subjective Approaches

Although it is assumed that the accumulation of goods and services serves as an instrument through which people enhance their feelings of well-being, previous research (e.g., Campbell, Converse & Rodgers, 1976) has shown that there is not necessarily a strong relationship between affluence and SQL. SQL assessments measure perceptions of well-being--how people feel about their lives--with quality of life being operationally defined in that manner. For example, Dalkey and Rourke (1973) wrote, "in our instructions to the subjects we defined the term 'Quality of Life' to mean a person's sense of well-being, his satisfaction or dissatisfaction with life, or his happiness or unhappiness" (p. II-210).

Researchers (e.g., Campbell, 1981) who favor a subjective approach maintain that the only direct source of information on the feeling about a life is the individual living that life. The literature on SQL is therefore concerned with how and why people experience their lives in positive ways, including cognitive judgments and affective reactions (Diener, 1984). The measures that have most frequently been used in the subjective approach are measures of positive/negative affect and measures of satisfaction/dissatisfaction. These two components are related but they are not identical and, in some circumstances, have been shown to move in opposite directions in relation to situational variables (Andrews & Withey, 1976; Campbell, 1981; Campbell et al., 1976).

The Affective Component

Bradburn (1969) chose to equate subjective well-being with "avowed happiness," and to define happiness as the degree to which an individual has an excess of positive over negative affect. Positive and negative affect were assessed by asking respondents how often they had experienced certain positive and negative feelings "during the past few weeks."

Somewhat surprisingly, Bradburn (1969) found the two affect dimensions to be independent. The lack of correlation means that information about the extent of positive affect experienced during a specified period does not provide any information about the extent of negative affect experienced. The independence of the two dimensions is further supported by the fact that positive and negative affect correlate with different personality variables. For example, Warr, Barter, and Brownbridge (1983) found that extraversion was significantly associated with positive affect, but not with negative affect; while neuroticism was associated with negative affect but not with positive affect. Because Bradburn concluded that overall sense of psychological well-being was a function of the difference between level of positive affect and level of negative affect, he made use of an Affect Balance Scale calculated as the difference between scores on the two dimensions. There is a similarity between the independence of positive and negative affect as predicted by affect balance theory and the two-factor theory of job satisfaction proposed by Herzberg, Mausner, and Snyderman (1959), where it was shown that the factors that made people satisfied with their jobs were independent from the factors that made people dissatisfied with their jobs. Cherlin and Reeder (1975) advocated examining the two affect scales separately rather than utilizing a difference score, an approach that was also used by Baker and Intagliata (1982) in their evaluation of a community support system.

Warr et al. (1983) suggested that the independence of positive and negative affect can be explained as a function of response mode and scoring procedures. They found that there was a strong negative relationship between the two aspects of affect when responses are given in terms of proportion of time, instead of a simple count of positive and negative experiences. Fordyce (1978) also advocated a proportion measure, and other researchers (e.g., Diener & Larsen, 1984) have measured affect intensity. Frequency and intensity of affects were found to vary independently of each other, leading Diener, Larsen, Levine, and Emmons (1985) to theorize that the effects of frequency and intensity combine in additive ways. Therefore, the overall relationship of positive and negative affect will tend to be nullified, explaining why there does not appear to be any relationship between the two dimensions.

Cheng (1988) pointed out that there is a basic difference between such affect measures and an appraisal measure of overall happiness, as people can experience an increase in the ratio of positive emotions to negative emotions without experiencing an increase in the overall happiness of their lives. Correlations between positive or negative feelings and life happiness have been unexpectedly low, and it would be unwise to assume that there is a straightforward correspondence between how one feels and how one judges one's overall affect quality. Because of this and the other theoretical difficulties associated with using positive and negative affects to form an overall index of SQL, numerous researchers have sought to measure a more cognitive component.

The Cognitive Component

The second component of subjective well-being is a cognitive one most commonly operationalized as satisfaction. Satisfaction and happiness appear to be very similar constructs but, despite the fact that the literature does not always distinguish between the two, there are underlying differences. Conceptually, happiness is an appraisal of emotional experience, whereas satisfaction involves the comparison of objective conditions to some internal standards (Cheng, 1988). Campbell et al. (1976), McKennell (1978), and McKennell and Andrews (1980) all make a similar distinction between satisfaction and affect: satisfaction is tied to expectations and standards of comparison in terms of which current circumstances are being evaluated, and affect refers to an immediate feeling state that is not anchored to cognitive frames of reference. In the opinion of McKennell (1978), understanding of SQL will be advanced as the distinction between cognition and affect is recognized and researched.

It has been shown that a given level of satisfaction can be associated with different affective states, indicating that these are two separate dimensions of well-being that can vary independently. Campbell et al. (1976) reported a correlation of .50 between a global happiness measure and a global satisfaction measure, which meant that the two shared only 25 percent of the total variance. Thus, they found that there were people who were happy but not satisfied and vice versa. Further, they found systematic differences associated with groups having discrepant positions on affect and cognitive measures (i.e., the unhappy-but-satisfied group and the happy-but-dissatisfied group). For example, younger people are more likely to be happy but dissatisfied, while the opposite is true of the elderly. If happiness and satisfaction ratings amounted to the same thing, apart from measurement error, there would be no systematic differences between these two groups. As a result of such findings, researchers have generally rejected the hypothesis that satisfaction and happiness ratings are equivalent measures of the same variable.

Diener and Larsen (1984) reported that satisfaction was temporally and cross-situationally stable despite affect changes. This stability may occur because the internal standard against which people judge their life is subject to modification. Individuals may adjust their personal standards to avoid becoming too distressed or to help maintain self-esteem, with the result that satisfaction levels are relatively consistent across time. This means that satisfaction measures may be somewhat insensitive to changes brought about by planned interventions.

Satisfaction and happiness measures also behave differently over time. For example, Campbell et al. (1976) found that satisfaction increased with age but happiness decreased with age. In addition, the affective component of well-being can be expected to be more responsive to concerns in the immediate life-space of the individual than to events in the wider environment, and the opposite is true for the cognitive component (McKennell, 1978).

Although satisfaction has been shown to be a more cognitive measure than happiness, satisfaction nevertheless is thought to contain an affective component. In an effort to tap a purer measure of cognition, some researchers (e.g., Campbell et al., 1976) have employed a "gap" measure that represents the difference between respondents' assessments of their current situation and a personal standard of comparison. The current situation might be compared to the ideal, to the best ever experienced, to a social reference group, or to expectations.

The Relationship Between Objective and Subjective Indicators

A quite common finding in quality of life research has been that people in disadvantaged circumstances frequently report higher than average levels of satisfaction. Cantril (1965) also found that countries as far apart in per capita income as Nigeria and Japan, or Egypt and West Germany, did not differ in the average level of life satisfaction expressed by their citizens. In his study of 13 cities, Schneider (1975) reported that the correlation between the objective characteristics of the cities and a measure of life satisfaction reported from surveys of the residents of each city was essentially zero. Further, in national surveys conducted in the U.S. during the period between 1957 and 1972, when most of the economic and social indicators were moving rapidly upward, the proportion of the population who described themselves as "very happy" declined steadily. This decline was most apparent among the most affluent. Results of this type make it clear that the quality of life of a country, a group, or a person cannot be predicted simply from measures of their objective circumstances.

The conditions of satisfaction and happiness are clearly dependent on, first, the ability to survive; second, on a reasonable state of health; and third, on a multiplicity of things that permit or cause the achievement of desires or aspirations (Henshaw, 1973). Glatzer and Mohr (1987) have suggested the following explanations for the weak relationship between objective conditions and subjective well-being:

1. People only value their own individual improvements vis-a-vis a relevant comparative group, and do not value improved conditions for their group as a whole.
2. Individuals are under social pressure to suppress feelings of dissatisfaction.
3. Expectations will usually adjust to reality.
4. Expression of dissatisfaction is culturally learned and to a certain extent independent of actual experience.
5. Those living under favorable conditions are the most inclined to be open to new value standards and therefore more likely to express criticism and dissatisfaction.
6. Different individual standards of comparison result in varying levels of satisfaction in comparable social situations.

One of the mechanisms that has been proposed to explain why two individuals in the same circumstances may report very different levels of satisfaction is aspiration level. The conventional wisdom is that aspiration level rises with education, and that today's well-educated society will not be satisfied as easily as the previous generation. Further, people who lack alternatives are more satisfied than people with many alternatives, and education is designed to increase one's knowledge of alternatives. This explanation may account for the finding of Campbell et al. (1976) that education seems to act as a satisfaction depressant in most areas of life. Prior experience is also a factor in cognitive judgments of well-being; people who are more aware of possibilities tend to show greater dissatisfaction when current circumstances are poor. However, when negative situations remain fixed for a long period of time, a process of adaptation may occur. If the situation

is poor, aspiration level will gradually decline accordingly. This may explain why people trapped in bleak situations seem able to find satisfaction, and why there is not more congruence between OQL and SQL measures. For example, many of the elderly express satisfactions out of all proportion to their objective welfare as it is commonly construed.

If objective conditions are dichotomized into "good/not-good" and subjective perceptions into "positive/negative," people can be grouped into four categories or groups: good conditions and positive perceptions, good conditions and negative perceptions, poor conditions and positive perceptions, and poor conditions and negative perceptions. Glatzer and Mohr (1987) labeled these four conditions well-being, dissonance, adaptation, and deprivation, respectively.

Combining Objective and Subjective Measures

In the past investigators have been sharply divided in their preference for objective or subjective measures of quality of life. More and more, however, researchers have come to acknowledge that the information provided by the two types of indicators is complementary, rather than redundant. The power and usefulness of both types of variables can be increased by combining them (Cheng, 1988). Insofar as we have a greater understanding of how people arrive at their subjective assessments of quality of life and the objective conditions related to those judgments, we shall be in a better position to formulate and execute effective social policies (Bradburn, 1969). Andrews and Withey (1976) stated that "only when both types of measures (subjective and objective) are concurrently measured will it be possible to know how demonstrable changes in living conditions are affecting people's sense of life quality and, conversely, whether changes in people's sense of life quality can be attributed to changes in external conditions." In Germany, the national social report analyzing living conditions and subjective well-being has utilized both objective and subjective measures for more than a decade (Glatzer, 1987; Zapf, 1980). Similarly, the OECD task force on quality of life has moved to include perceptions along with objective measures (Verwayen, 1980). Solomon et al. (1980), reporting on the UNESCO quality of life research program, stated their belief that subjective or attitudinal variables must be taken into account along with objective measures. They suggested that efforts should be directed toward comparing the distribution patterns of "satisfiers" with reported satisfaction, and stated that "the analysis of their discrepancies and the mechanisms mediating between them is one of the most important and most rewarding fields of quality of life research" (p. 229).

MEASURING QUALITY OF LIFE

If people are asked to describe their lives, they can respond either in terms of life as a whole or with specific reference to the domains of life in which their experience is segmented. Andrews and Withey (1976) confirmed that people could and did divide their lives up into domains that, although not isolated, were separate enough to be identified and evaluated as a distinguishable part of life. Domains of life are related to the activities, roles, places, and relations with people in an individual's life. The degree to which individual wants and needs are satisfied within a particular domain of life is the quality of life for that domain; thus, we speak of quality of work life, quality of family life (Rice, 1984). Although occasionally global measures have been used alone, most quality of life assessments have combined both types of measures and have been concerned with the relationships among domains and the perceived quality of life as a whole (Andrews & Withey,

1976; Baker & Intagliata, 1982; Campbell et al., 1976). Other research has examined the relationship between global quality of life and a single aspect of life, such as financial situation (Blishen & Atkinson, 1980); neighborhood satisfaction (Gutek, Allen, Tyler, Lau, & Majchrzak, 1983); or job (Chacko, 1983; Hunt, Near, Rice Graham & Gutteridge, 1977; Near, Smith, Rice & Hunt, 1983, 1984).

Domain Measures

The basic assumption underlying the use of domain measures is that people's sense of well-being has a lot to do with their feelings about various aspects of life that concern them. Intuitively, we would expect a global measure of well-being to reflect some compound of gratifications and disappointments with more specific features of life, such, as housing, financial situation, friendships (Campbell et al., 1976). Most people are clearly more satisfied and pleased with some aspects of their lives than with others, but it is generally assumed that the more domains people feel positive about, the stronger their sense of well-being. Life-domains scales are useful because they provide information about specific areas of life that is not captured by global assessments (Cheng, 1988).

Clearly, there are some facets of experience that have a great deal of meaning and importance for small fractions of the public (e.g., artistic expression) but are of little relevance to the general population. However, it would not be feasible to attempt to identify and measure all of them. Therefore, research efforts have concentrated on identifying life domains that are inclusive enough to tap most areas of experience and that also have wide applicability (i.e., concerns that are shared by most of the general population). However, when research is limited to special populations, such as mental health patients or the elderly, domains are often tailored to the specific research objective and population (e.g., Baker & Intagliata, 1982).

A number of research efforts have been undertaken to identify an inclusive list of life domains. Cantril (1965) asked respondents in 13 countries to define their hopes, fears and concerns, and to say what their "best possible" life and "worst possible" life would be like. To obtain an accurate picture of individual reality, respondents were not required to select between categories or alternatives but answered open-ended questions during a lengthy interview. The material was then content analyzed and organized into general categories of concerns. One result of that effort was a list of 18 domains that could be said to fully capture the concerns of a representative American sample.

Flanagan (1978) attempted to identify relevant life domains empirically, based on 6500 critical incidents collected from nearly 3000 people of various ages, races, backgrounds, and regions of the country. From this material, he identified 15 quality of life domains grouped into five general dimensions: physical and material well-being; relations with other people; social, community, and civic activities; personal development and fulfillment; and recreation.

Andrews and Withey (1976) assembled a large number of possible life concerns, drawing from previous surveys, important life aspects identified by various national and international organizations, and a series of interviews. They then wrote 123 questionnaire items to tap the concerns identified, and administered the survey to national samples. Responses were then used to

map the concerns in perceptual space and group them into content-oriented clusters, or domains. Twelve domains were identified and used in subsequent quality of life assessments.

Campbell et al. (1976) selected domains for assessment on the basis of prior research results, aiming for broad coverage and applicability to the general population (p. 62). They examined the contribution of satisfactions in these domains to global quality of life and found, as expected, that the domain satisfactions contribute unequally to the determination of global life satisfaction.

Table 1 presents, for comparison purposes, the domains identified through various research efforts. Examination reveals that certain domains are common across most of the studies. These include: work, leisure, health, financial situation, relations to family members, relations with friends, social and physical environment and aspects of self-fulfillment

Typically, satisfaction measures have been used more frequently to assess quality of life by domains than have happiness measures. This may be because use of the term happiness seems inappropriate for some domains (Cheng, 1988), making it difficult to construct domain scales.

Satisfaction has been shown to be lower in domains with the least object ambiguity (Campbell et al., 1976). Object ambiguity can be said to exist when there is little consensus about what is good --that is, when private taste is heavily weighted and external objective standards are absent. When there is little agreement about what is good, there is more latitude for evaluation and satisfaction is greater. Thus, satisfaction is likely to be high when marriage and family relationships are assessed because there is no clear, commonly-accepted standard of what is good. Similarly, results reported by Glatzer (1987) showed that there was a tendency towards lower satisfaction levels in life domains that refer to the public rather than the private sphere, perhaps because private life domains are less critically judged.

Domain satisfaction items generally follow a format similar to that used by Campbell et al. (1976). For example, "All things considered, how satisfied or dissatisfied are you with this neighborhood as a place to live?" The "all things considered" item will usually follow items assessing satisfaction with specific characteristics of the domain. When the domain is the respondent's neighborhood, such items might ask about safety, racial mix, air quality, status, and school quality. (Allen, Bentler, & Gutek, 1985). Each domain section would also be likely to include some objective indicators (e.g., do you rent or own your home?)

Global Measures

Global life measures are concerned with assessment of life as a whole, and can be understood as reflecting a composite of satisfactions with more specific domains of life. Each individual combines domain satisfactions in a personal way, and demographic variations in combining patterns are common. However, it is the meaning attributed to the whole of life that matters to the individual. Therefore, a global assessment probably reflects some portion of affect outside that represented by the domain satisfactions. For this reason, there will always be some variance in global measures that would not be captured by an additive model of domain satisfaction.

Table 1

Quality of Life Domains as Identified in Previous Research

Flanagan, 1978	Campbell, Converse, & Rodgers, 1976	Andrews & Withey, 1976	Glatzer, 1987	Murrell, Schullie, Hutchins, & Brockway, 1983	Bestuzheva-Lada, 1980	Verwey, 1980
Physical & Material Well-being	Standard of Living	Economics	Living Standard	Income	(SOCIAL LEVEL)	(SOCIAL LEVEL)
Material well-being & financial security	Savings	Income, living standard	Household Income	Standard of Living	Material Well-being	Income
Health & personal safety	Housing	House/apartment	Housing	Housing	Housing	Wealth and
	Health	Job	Health	Family Life	Family Life	Deprivation
	Marriage	Costs, taxes	Marriage/Partnership	Family Activities	Marriage	Economic
	Family Life		Family Life	Community	Health	Accessibility
Relations With Other People	Friendships	Family	Household	Neighborhood	Work	Housing
Relations with spouse	Neighborhood	Marriage	Management	Health	Education	Employment
Having & raising children	Organizations	Things to do with family	Division of	Job	Cultural Activity	Quality of Working Life
Relations with other relatives	Belonged to	Close adult relatives	Household Tasks	Personal	Leisure	Measurement of
Relations with friends	City or County		Social Networks	Accomplishments	Transportation & Communication	Leisure
	Life in U.S.	Relations With Others	Social Security	Amount of Leisure Time	Environment	Environmental
	National	Fair treatment by others	System	Nature of Spare Time	Social Security	Quality
	Government	Accepted, admired by others	Environmental	Activities	Health Services	Inequality
	Amount of		Protection	Amount of Fun	Racial Relationships	Victimization
Social, Community & Civic Activities	Usefulness of	Local Area	Public Safety	Political Leaders	Deviant Behaviors	
Activities related to helping or encouraging others	Education	Safety, security	Job	Government's	Political	
Activities related to Local & national government	Job	Neighborhood	Education	Performance With Respect to the Economy	Relationships	
	Self	Local government	Leisure	Goods and Services	Value Orientations	
	Nonwork		Church			
	Activities	Oneself				
	Religion	Self-efficacy				
Personal Development & Fulfillment		Amount leisure time				
Intellectual development		Health, physical exercise				
Personal understanding & planning						
Occupational role (job)		The Larger Society				
Creativity and personal experience		Society's standards				
		National government				
		mass media				
Recreation		Other				
Socializing		Religious faith, fulfillment				
Passive/observational		Getting around, mobility				
Recreational activities						
Active/participatory						
Recreational activities						

Global measures have included both affective and cognitive assessments of life as a whole, and have utilized both single-item and multiple-item scales. Single-item scales, when combined with domain measures, have been the most popular for measuring life as a whole. Some examples of frequently-used global items include:

1. How satisfied are you with your life as a whole these days? (Campbell et al., 1976). Responses are made on a 7-point scale.

2. How do you feel about your life as a whole? Responses range from delighted to terrible. (Andrews & Withey, 1974, 1976) The question is repeated twice and an index (known as Life 3) is computed.

3. Taking all things together, how would you say things are these days--would you say you're very happy, pretty happy, or not too happy these days? (Andrews & Withey, 1976)

4. In general, how happy or unhappy do you usually feel? (Fordyce, 1978). There are 11 response options, each graphically anchored with a series of mood adjectives. For example, the highest choice is anchored with "feeling extremely happy, ecstatic, joyous and fantastic."

5. Cantril (1965) showed a picture of a nine-step ladder anchored at one end with the phrase "Best possible life for you" and at the other with "Worst possible life for you" and asked, "Where on the ladder do you stand at the present time?"

Among multi-item measures of global well-being are the 10 item true/false inventory that yields a positive affect score, negative affect score, and affect balance score (Bradburn & Caplovitz, 1965); the Campbell et al. (1976) Index of Well-Being, consisting of semantic differential type items where the respondent rates his life along eight dimensions; and the Satisfaction with Life Scale (Diener, Emmons, Larsen & Griffin, 1985) focusing on life satisfaction as a cognitive evaluation.

Validity and Reliability of Subjective Measures

Most evaluations of the various measures of SQL have been based on interview data from four national probability samples between May 1972 and October 1973 (Andrews & Withey, 1976); a national probability sample interviewed in 1971, with a percentage reinterviewed in 1972 (Campbell et al., 1976); and four university student samples and an elderly sample described by Larsen, Diener, and Emmons (1984).

Validity

The construct validity of a measure is its correlation with the true state of whatever was intended to be measured, and is reflected by the proportion of the total variance that is valid variance (that is, not measurement error or random error). Convergent validity can be demonstrated by showing that the measure is correlated with other measures of the same construct, or with other variables to which it is related in theory.

Andrews and Withey (1976) experimented with a number of techniques for measuring SQL as a whole. The best known was their Delighted-Terrible scale with the following response options:

terrible, unhappy, mostly dissatisfied, about equally satisfied and dissatisfied, mostly satisfied, pleased, and delighted. In addition, they also used such devices as a Faces scale where respondents selected, from nine options, the drawing of a face that reflected feelings closest to their feelings about their life; and a Circles scale where the choice was made among nine circles with various patterns of pluses and minuses reflecting proportions of good and bad in life. In some surveys they also included the 7-point satisfaction measure used by Campbell et al. (1976). Altogether they examined the properties of 10 different measures.

By using several measures in each of the national surveys, Andrews and Withey (1974, 1976) were able to compare the amount of valid variance and error variance in each. They achieved their validity estimates by the application of a structural measurement model to each of the data sets. The results of these modeling analyses showed the Delighted-Terrible scale, the Faces scale, and the Circles scale to have the highest validities, closely followed by the 7-point satisfaction measure. Validity coefficients reported for the Delighted-Terrible scale ranged from .70 to .82, depending upon the data set. The validity coefficient obtained for the 7-point satisfaction measure (based on one data set only) was .73. Andrews and Withey concluded that scales where all response options are labeled perform better than scales where only the anchor points are labeled, and pointed out that the three scales that performed best in their analyses were of the labeled-category type.

Correlations between the various measurement scales usually have been in the .50 to .64 range. For example, Larsen et al. (1984) reported a correlation of .52 between Andrews and Withey's (1976) global measure on the Delighted-Terrible scale and Cantril's (1965) global ladder measure; and of .64 between it and the Campbell et al. (1976) Index of Well-Being. Andrews and Withey found correlations between their Delighted-Terrible scale and the Ladder measure to be .51.

Reliability

The reliability of a measure is the correlation between two parallel versions of the measure that may be (1) taken at two different times, (2) stemming from two different sources, or (3) consisting of different, but equivalent, component items. In general, the more cognitive the measures have been the more stable they have been over time.

Global Measures. Larsen et al. (1984) computed 1- and 2-month test-retest reliabilities for several measures, utilizing relatively small student and elderly samples. The Satisfaction with Life multi-item scale (Diener et al., 1985) had a 2-month reliability of .83, compared to a .51 for the Campbell et al. (1976) Index of Well-Being and .32 for the Cantril (1965) self-anchoring ladder scale.

Andrews and Withey (1976) assessed test-retest reliability of their global life measure on the Delighted-Terrible scale by asking respondents the identical question twice during the interview, with approximately 10 to 20 minutes elapsing between administrations of the item. They reported a correlation of .68 between the two responses.

Domain Measures. Domain satisfaction items in a national sample (Campbell et al., 1976) had 8-month reliabilities ranging from .42 (neighborhood) to .67 (health). Domain measures have been shown to be more reliable over time than are global satisfaction measures, probably because their cognitive component is greater.

Validity and Measurement Error of Objective Indicators

Many people tend to believe that measurement error in quality of life assessment can be avoided by relying on objective indicators. However, it should be remembered that these are only "indicators" rather than direct measures. The determination of what constitutes a valid indicator is heavily dependent on the judgment of someone other than the people whose life quality is being assessed. Difficulties are experienced whenever a single indicator is wrongly used to measure a concept that requires multiple indicators (Cazes, 1972). For example, the prevalence of mental illness is sometimes measured by the number of patients and length of stay for hospital cases, ignoring the out-of-hospital population. Another kind of fractional measurement occurs when the amount of resources deployed by an organization (or a social program) is measured as a substitute for the extent to which its goals are realized.

Objective indicators are also subject to measurement error. For example, a commonly-used housing measure of people-per-room is critically dependent on judgments about what constitutes a room. There is seldom universal agreement, as illustrated by the fact that a kitchen is counted as a room in official statistics in Germany, but is not counted as a room in Norway (Scheer, 1980).

Bias and Correlated Error

People in our society are generally reluctant to say that they are unhappy or that they are not satisfied with their life. Responses from five national samples surveyed between 1957 and 1978 averaged about 30 percent who said they were "very happy" (Campbell, 1981) and only a limited minority stated that they were very unhappy or dissatisfied. Such results do not always seem to fit with what is known about objective life characteristics, prompting questions about the extent to which the data are inaccurate because of a positive response bias. At the domain level as well responses tended to cluster at the positive end of the scale, consistent with a phenomenon that occurs whenever people are asked to provide ratings of any kind. As a result of this tendency, absolute interpretations of results are likely to be less meaningful than comparative interpretations.

A scale will not discriminate adequately among respondents whenever a large proportion of a population is lumped together into the same response category. Such a distribution of responses is particularly troublesome when the clustering occurs at one end of the scale. Not only does a situation of this type present a validity problem, such a skewed distribution also limits the types of statistical analyses that may be conducted. It is likely that such a measure would also be relatively insensitive to future changes. Researchers have therefore sought strategies to overcome the problem of inadequate differentiation at the positive end of the scale. One technique is to employ a scale with additional discrete response categories. Accordingly, a number of researchers (e.g., Fordyce, 1978; Glatzer, 1987) have moved to an 11-point scale in an effort to achieve more discrimination among people. Andrews and Withey (1976), in their analyses of some commonly-used measures, showed that the number of categories in a scale may have some independent impact on where people place themselves.

Another strategy suggested to overcome positive bias is to make the anchor points of the scale more extreme. For example, in Cantril's (1965) ladder scales, the most positive category was defined as almost perfect. That category was labeled explicitly as "the best life you might expect to have," and it was found that relatively few people were prepared to select a category that

suggested their life could not be improved (Andrews and Withey, 1976). The use of a self-administered questionnaire should also help reduce positive bias, as there is some evidence that people tend to rate themselves happier or more satisfied when being interviewed than when filling out a questionnaire (Bremer and McCauley, 1986).

Campbell et al. (1976) made an effort to assess the extent of response bias in their data by including a subset of items from the Social Desirability Scale (Crowne and Marlowe, 1964) in their instrument. Three items each were used from the Assert Good subscale, which measures a tendency to assert "goodness" that is not true, and the Deny Bad subscale, which measures a tendency to deny "badness" that is true. Correlations of this abbreviated social desirability index (combining all 6 items) with various measures global well-being ranged from .12 to .20. The relationship of the social desirability index to domain measures was marked by correlations similar to those for global measures. The tendency to deny bad was more strongly related to well-being than was the tendency to assert good.

Campbell and his colleagues also examined response bias by demographic groups, finding that the tendency to provide socially desirable responses increases with age and that the poorly educated are much more likely to portray themselves in an unrealistically favorable light. However, after controlling for both age and social desirability, they concluded that bias in their data had only marginal effects on correlations among measures of SQL, or between quality of life measures and other variables.

Mood

The mood of a respondent may be an important variable that affects the validity of SQL measures, specifically those that are heavily weighted on the affective component (Cheng, 1988). Therefore, happiness reports are thought to be especially sensitive to moods that can vary in the short term, even on a day-to-day basis. However, the problem of mood swings has not usually been a severe one for quality of life researchers, as the variations for any single individual are not likely to cover the entire range from delirious happiness to abject unhappiness (Campbell et al., 1976).

In two laboratory experiments, Schwarz and Clore (1983) demonstrated that ratings of both happiness and satisfaction were substantially affected by mood changes due to the weather or induced recall of emotion-laden events. Their data suggest that people use their momentary affective states as information in making judgments of how happy and satisfied they are with their lives in general, and indicated a tendency for people to attribute bad moods to external sources.

Cheng (1988) suggested that a measure of mood state might be included in quality of life instruments to be used as a correction factor. A single-item measure of this type was included by Andrews and Withey (1976) to measure the mood of respondents on the day they were interviewed. They reported small correlations of approximately .10 between the mood measure and global life measures.

QUALITY OF LIFE MODELS

At present, quality of life can be related to many variables, but the nature of these relationships is not clearly understood and an integrated framework to organize the findings is lacking (Cheng,

(1988). In the following section of this report, several conceptual models will be presented, including one for assessing the relative contributions of affect and cognition in SQL assessments and another for predicting global satisfaction from an index of domain satisfactions.

Conceptual Models

The conceptual model proposed by Campbell and his colleagues (1976) illustrated the interrelationships among domain satisfaction levels, general life satisfaction, and behavior. In this model, as in many others, overall life satisfaction is thought to be compounded from satisfactions and dissatisfactions experienced across all of the specific domains of life. Both overall life satisfaction and domain specific satisfactions are thought to shape coping and adaptive behavior.

Domain-specific perceptions of life quality are determined by the objective domain attributes, perceived domain attributes, the individual's evaluation of those attributes, and satisfaction related to the domain. The perceived attributes of any domain are conceptualized as dependent on, but distinct from, the objective attributes of the environment. That is, an individual's perception is not necessarily congruent with the actual environment. The Campbell model also takes into account the role played by the personal characteristics of the individual, or those demographic characteristics that summarize the individual's social location and past experiences. Personal characteristics are shown as having a direct effect on perceived domain attributes, evaluated domain attributes, domain satisfaction, and general life satisfaction. Personal characteristics are further believed to have a reciprocal interaction with objective domain attributes. In addition, personal characteristics affect evaluated attributes through individual standards of comparison, conceptualized as an intervening variable.

The conceptual model proposed by Andrews and Withey (1976) is similar to that of Campbell and his colleagues in that domain assessments are combined to yield an overall assessment of perceived quality of life. However, this is a two dimensional matrix model that includes an attempt to specify the criteria by which individuals evaluate the various domains. Thus, this model elaborates the framework in which a person's actual evaluations of well-being are hypothesized to occur. Criteria, which may be thought of as values salient for the individual, might include such things as achievement of success, beauty and attractiveness, safety, fun, and independence and freedom. In the matrix model, the domains form the rows and criteria form the columns. Such a framework would then yield three levels of specificity of quality of life assessments: a global measure, domain measures, and finally domain by criterion measures. The question, "How do you feel about the beauty and attractiveness of your house"? is an example of the domain by criterion level of specificity. There is no requirement that every cell contain an evaluation, as some may be irrelevant.

This basic Andrews and Withey (1976) model of the process people use to evaluate their well-being assumes that feelings about life as a whole can be explained by either domains or criteria. However, in the course of their research, these authors concluded that criterion-type items cannot by themselves provide a statistically efficient coverage of the entire structure of perceptions of life quality. Criterion items were also found to be more interlinked and redundant in conceptual space than domain items.

Andrews and Withey (1976) suggest that their model might be further elaborated by including feedback loops to reflect the possibility that global evaluations (previously arrived at) might influence future evaluations at the specific domain level at the same time that specific evaluations influence the global evaluations.

A third model of interest is that of Baker and Intagliata (1982). This is a conceptual model of the relationships between external environment, individual experience, individual health status, and quality of life responses. This model suggests that there are four separate foci of interest as related to quality of life assessment. Researchers concerned with Focus I, labeled the "environmental system" are those who concentrate on the objective indicators of quality of life. With Focus II, the "experienced environment", the interest shifts to the perceived attributes of the environment, with recognition that everyone does not see the world in the same way. Focus III, which Baker and Intagliata (1982) call the "bio-psycho system", represents the actual degree of mental and physical health of the individual and his or her attitudes, values, and aspirations. The bio-psycho system would be somewhat analogous to criteria in the Andrews and Withey (1986) model. The thrust of some research has been the degree of fit between the between the perceptions of Focus II and the aspirations and values of Focus III, with results suggesting that life satisfaction is related to the degree of fit between the two. Finally, Focus IV research concentrates on behavioral outcomes, particularly respondent behavior in response to the questionnaires and interviews assessing quality of life.

Models for Combining Domain Satisfactions

Both Andrews and Withey (1976) and Campbell et al. (1976) found that the relationship between domain evaluations and global assessments of life quality could be represented by a linear additive model. Campbell reported that a composite measure of satisfaction in 10 domains correlated almost .70 with a global measure of satisfaction. Using the Delighted-Terrible scale, Andrews and Withey found that 12 concern (domain) scores accounted for 62 percent of the variance in a global measure on the same scale, and 57 percent of the variance in a global assessment on a 7-point satisfaction scale.

In addition to domain evaluations, respondents in the national samples surveyed by Andrews and Withey (1974, 1976) and Campbell (1976) were also asked to provide domain importance ratings. In subsequent analyses, it was shown that weighting the individual domain evaluation scores by their respective importance ratings did not increase predictive power above that achieved by a simple summation. Various attempts to manipulate the data or to use different statistical procedures all led to the conclusion that ratings of importance are not useful as weighting factors. Similar results were obtained in a study of quality of life of women in a rural construction township in Australia, where the community features that were rated highest were not those that were important to them (Snyder, Murdoch, Pamment, Law, & Payne, 1985).

Andrews and Withey (1976) also searched for interactions among domains in their data. For example, they had theorized that perhaps people who were highly satisfied with some psychologically-central life domain might show lower relationships between their evaluations of other domains and life as a whole than would people who were less fulfilled by some central concern. In nearly all cases they found the interaction was virtually zero and nowhere did they find evidence of marked interaction.

Structural Equation Models of Affect and Cognition in Global Assessments

A series of structural equation models seeking to define the role of cognition and affect in global life assessments have been the concern of a number of quality of life researchers (e.g., Allen, Bentler & Gutek, 1985; McKennell, 1978; Andrews & McKennell, 1980; McKennell & Andrews, 1980).

Measures of perceived quality of life--like attitude measures in general--are presumed to consist of some combination of four components: affect, cognition, random error, and correlated measurement error. Applying a structural equation model, Andrews and McKennell (1980) assessed the relative contribution of each of these four components in 23 measures that have frequently been used in quality of life assessments. They examined the ratio of affect to cognition, the ratio of positive affect to negative affect, and the ratio of true variance to total variance. They found that both happiness and satisfaction scales were shown to contain components of cognition and affect, with satisfaction measures being higher in cognition and happiness measures higher in affect. Cognition was shown to be statistically independent of affect, and to relate differently to outside variables.

Continuing with the application of structural equation models, McKennell and Andrews (1980) also tested the assumption that domain satisfactions have a direct causal impact on global quality of life assessments. Because such a model does not explain the correlation between affect and global evaluations, they attempted to integrate a general cognitive factor and a general affect factor into the basic domain/life-as-a-whole (LAW) model. Their results suggested that the correlation between domains and LAW may come about indirectly through the correlation of the domains with affect and cognition.

The model as revised by McKennell and Andrews (1980) thus states that people weigh general affect and cognition to arrive at global assessments of life quality. If this revised model is accurate, it suggests that global assessments can be obtained separately from domain evaluations. This revised model need not invalidate the idea of a linear additive relationship between domain evaluations and global assessments of life quality, however. Rather, in this model, the contribution of the domains is thought to be indirect via the association of domain-specific elements of affect and cognition with global affect and cognition. According to these authors, future quality of life research should give priority to the construction of direct indicators of global cognition that would be domain free and analogous to the affect scales currently in use.

PREDICTING OVERALL QUALITY OF LIFE

Domain Evaluations

Although an additive index of domain satisfactions has proved to be the best predictor of global life satisfaction, some domains have been shown to be more closely related to global happiness and satisfaction than others. These domains are not necessarily the domains to which respondents assign the highest importance ratings. In the Campbell data from national samples, satisfaction with self had the strongest relationship with general life satisfaction. This was followed by satisfaction with family life and satisfaction with standard of living. Satisfaction with marriage was also high on the list, as were satisfactions with friends and work. Less significant were the domains

of the community, the neighborhood, housing, and the nation at large. Satisfaction with education and, surprisingly, with health were only weakly related to satisfaction with life as a whole. Campbell (1981) concluded that although individuals state that good health is a very important requirement for a good life, most people appear to take it for granted so that their satisfaction with health has relatively little impact on their expressed feelings of well-being.

There was little difference between the national samples of 1971 and 1978 in the order of the correlations between domain satisfactions and global satisfactions. Although the pattern for the population was very stable, specific individuals or subgroups nevertheless departed dramatically from the general pattern as the circumstances of their lives differed from the average. For example, satisfaction with health had a stronger link to the general sense of well-being for older respondents than for younger. Both marital satisfaction and satisfaction with one's community had more impact on the sense of well-being for housewives than for working women.

Andrews and Withey (1976) found much the same pattern of relationships between individual concern (domain) evaluations and global evaluations. Employing multiple regression techniques, five domain evaluations were found to be significant predictors of their life-as-a-whole measure. These were: evaluation of the amount of fun in one's life, evaluation of family life, an index of financial evaluations, evaluation of self efficacy, and evaluation of one's house/apartment.

In a study of Army families, the largest portion of the variance in both general well-being and global life satisfaction was explained by satisfaction with intimate relationships (Rosen & Moghadam, 1988). Other significant predictors were satisfaction with financial aspects and the level of military-life stress experienced.

Demographic Variables and Individual Differences

After reviewing the literature on quality of life, Diener (1984) concluded that individual demographic variables rarely account for more than a few percent of the variance in SQL measures, and taken together probably do not account for much more than 15 percent of the variance. In the Andrews and Withey (1976) data all the demographics they examined (income, sex, race, family life cycle, age, and education) together accounted for about 5 percent of the variance in their outcome measure. Similarly, Campbell et al. (1976) reported that 10 situational variables used simultaneously explained no more than 17 percent of the variance in any of their three measures of global quality of life. Situational variables used in the Campbell analysis were: life cycle, urban/city residence, age, race, working or other, family income, occupation of head of household, education, religion, and sex. In the Rosen and Moghadam (1988) study of the quality of life of Army wives, only 3 percent of the variance was accounted for by age, education, and husband's rank.

Income. Blishen and Atkinson (1980) reported that data collected from Canadian national samples revealed a zero-order correlation of .41 between satisfaction with life and satisfaction with income; however, the correlation between income itself (as opposed to being satisfied with one's income) and life satisfaction was only .07. Only 2.4 percent of the variance in life satisfaction was attributable to income and age combined. These results are typical of income effects found in other data.

Aggregate data over time indicate that as real income increases within a country, including the U.S., national samples do not necessarily report more happiness or satisfaction. It appears that absolute levels of income are critical to happiness only at extreme levels of poverty. Once a sufficient level of income is attained, further increases in income seem to have a minimal effect on life satisfaction. Although those with higher household incomes generally reflected higher satisfaction with income, in Germany fully 8 percent of those in the highest income brackets were dissatisfied with their income (Glatzer, 1987).

It is likely that social comparisons are important factors for the determination of satisfaction with one's income. Apparently, the perception of one's own household income compared to the household income of the average citizen exerts a much stronger influence than the absolute level of income (Glatzer, 1987).

Age. Individuals who say they are happy but dissatisfied are concentrated among the young and better educated (Andrews and Withey, 1976). The elderly, on the other hand, are more satisfied overall but less happy. Campbell et al. (1976) suggested that the following factors might combine to produce the strong and pervasive age gains in satisfaction in almost all domains of life: (1) progressive mobility over the life span into situations that are objectively better, (2) progressive occupancy of niches that are better fitted to the individual's particular needs and tastes along with continuing modification of and personal adjustment to such niches, and (3) more subjective "accommodation effects" (p. 164).

Gender. The vast majority of research has found no differences between men and women on life satisfaction or well-being (Andrews and Withey, 1976; Campbell et al., 1976; Glatzer & Mohr, 1987).

Values. German researchers measured the value orientation of respondents on a materialism/postmaterialism dimension, a dimension that refers to the priority assigned to various social objectives. Thus a materialism orientation indicates a preoccupation with material rather than intellectual or spiritual matters. Approximately 16 percent of the German population in 1984 was reported to express the "new" postmaterialism values that reflect less priority given to material objectives (Habich, 1987). People with post-material values were more dissatisfied in many life domains than those with materialist or mixed values. They were less satisfied with the living standard, household income, housing, workplace, leisure time, marriage, family life, household management, the social security system, the church and environmental protection (Glatzer, 1987).

Personality. High self-esteem has been found to be one of the strongest predictors of SQL (Diener, 1984) and well-being scales covary strongly with the Rosenberg Self-Esteem Scale. They are also moderately correlated with the temperament measures of sociability and activity, and moderate to strong negative correlations have been found between well-being scales and neuroticism, self-reported symptoms, and emotionality (Larsen et al., 1984).

APPLICATIONS

Quality of life is an inclusive concept that covers all aspects of living as it is experienced by individuals. Because the concept is universal and is not culture-bound, it has provided a useful framework for numerous investigations in several countries and for a variety of applications.

Health Care

The deliberate assessment of quality of life has recently become an important objective of medical research. In order to make informed decisions about the nation's health, Congress receives various reports of statistical indicators including the crude mortality rate, the infant mortality rate, and years of potential life lost. Although important, each of these measures ignores dysfunction while people are alive. However, the primary goal of health care is to provide incremental survival time and/or incremental quality to that time - these are the valued endpoints, not the blood pressure reading or the biopsy finding (Walker & Rosser, 1988). Medical and health service researchers are developing new ways to assess health status quantitatively and, although some approaches to the measurement of health-related quality of life still combine measures of morbidity and mortality to express health outcomes in units analogous to years of life, that figure is now adjusted for diminished quality of life associated with diseases or disabilities (Kaplan, 1990). According to Read (1988), the difference between quality of life health measures and the more traditional anatomical, physiological or chemical variables can be viewed as a distinction between measures of goal attainment and measures that predict goal attainment. The development of new quality of life measures that allow medical researchers to quantify the subjective value of the effectiveness of medical therapies has been a recent innovation. With these measures, researchers are now able to directly assess the extent to which alternative therapies benefit patients (Kaplan & Anderson, 1988).

Chubon (1987) described efforts to develop a quality of life measure that would be sensitive to factors associated with a wide spectrum of chronic illnesses and disabilities. Most instruments previously used for health-care evaluation had been disease specific or else concerned only with objective indicators of functional deficits, such as physical measures. Without subjective measures, the meaning of the functional deficits to the persons who manifested them was unknown. Chubon observed that while the objective and subjective components of deficits are related, the subjective seems more closely linked to individual behaviors and should therefore be the most useful to the health care professional seeking to understand responses to treatment. He selected 20 "impact areas," developed an item to evaluate each, and combined them to yield the Life Situation Index. According to Chubon, this instrument has demonstrated its ability to discriminate between populations (e.g., healthy students and the chronically ill), and to detect pre- and post-treatment differences.

Baker and Intagliata (1982) suggested that quality of life was an appropriate focus of programs for the chronically mentally ill because comfort rather than cure is the best that can be hoped for at the present level of knowledge. In their opinion, a multi-dimensional variable such as quality of life offers the hope of assessing the synergistic interaction of a number of less powerful outcome variables.

Social Policy and Planning

Social policy in this country is based on implicit utilitarianism, a doctrine proclaiming that the aim of all action should be the greatest happiness of the greatest number. Insofar as we are able to understand how people arrive at their judgments of their own happiness and how social forces are related to those judgments, we shall be in a better position to formulate and execute effective social policies (Bradburn, 1969).

The wisdom of a particular social policy depends to a large degree on the extent to which it is able to accomplish its intended goals. Quality of life provides a guiding framework for analyzing causal relationships and attempting to isolate policy impacts, both positive and negative. International comparisons can play an extremely useful role in efforts aimed at theory formation and the consideration of alternative policies (Verwayen, 1980). McCall (1975) observed that the current interest in quality of life stems from a desire on the part of social scientists to provide measures of social progress for governmental decision-making. Similarly, Cazes (1972) suggested that one of the themes underlying the current interest in social indicators is social planning.

Program Evaluation and Needs Assessment

Because the construction of a SQL measure is relatively straightforward, an evaluator can tailor-make a quality of life instrument to a specific planning/evaluative context. It may be difficult, however, to capture the effects of a program intervention with a global life quality measure in that few programs can produce positive changes in virtually all aspects of clients' lives. Life domain scales, on the other hand, can be used to provide information in specific spheres, and this information can then be examined in relation to program objectives. Because of the stability of satisfaction measures and the tendency for people to use the positive end of the scale, it is especially important in program evaluation applications to increase score variations, either by increasing the number of items pertaining to a domain or by widening the range of possible responses (Cheng, 1988).

Cheng (1988) suggests also that life domain scales have the potential to be very useful in efforts to evaluate the impact of a program on the population it serves. If, for example, two similar communities that were matched on their pretest life-domain profiles are found to have very different profiles in a post-test, such information would be valuable for assessing the impact of the program.

Functionally, SQL measures can serve as need-assessment tools as well as evaluation tools. Murrell, Schulte, Hutchins, and Brockway (1983) conducted a need assessment of a state-wide probability sample in Kentucky utilizing a quality of life framework. SQL was used as the criterion for determining which needs were most important, with the need measures for various domains as independent variables. High scores on the need measures indicated a high degree of unmet need and high scores on the quality of life measure indicated a high degree of well-being. For a need to be considered important, there would have to be a significant and negative association with quality of life. Subjective measures facilitated equivalent comparative and systematic measurement across life domains. The overall approach of using population well-being as a criterion, with multiple measures of unmet need as independent variables to form program-relevant patterns, appears to be feasible for decisions concerning allocation of resources.

When combined with objective indicators, SQL measures can be extremely useful for reaching conclusions about the needs of a community. If objective indicators are classified according to some criteria as "good" and "not-good" and perceptions of life quality are classified as positive or negative, four conditions will result: good objective indicators with positive perceptions, good objective indicators with negative perceptions, not-good objective indicators with positive perceptions, and not-good objective indicators with negative perceptions. Each of the four conditions dictates its own action strategy. When both objective indicators and perceptions of the

population are positive, it can be inferred that existing services are adequately meeting the needs of the population and should be continued. Good objective indicators coupled with negative perceptions of the population may indicate the need for additional services of a symbolic nature to address the negative perceptions. Positive perceptions when objective indicators are not-good suggests that reallocation of resources, and may explain low utilization of some programs or services. Finally, the condition of not-good objective indicators with negative perceptions calls for a close examination of existing services and substantial changes therein.

Military Applications

Although national probability samples have generally excluded residents of military housing from quality of life assessments, the military services have themselves conducted several investigations. However, assessments of military life quality have been limited in that global and domain-specific measures seldom have been combined in a single survey. Domain measures, in the form of satisfaction ratings, have been used much more extensively than global measures in military surveys. Typically, military surveys have concentrated on a limited subset of domains and have not included both subjective and objective measures in the same assessment.

The Air Force conducted four surveys that assessed the degree of satisfaction experienced in nine components of Air Force life and the importance of the components to the individual respondents (Caldwell, 1979). Quality of life per se was not measured directly, but was inferred. The surveys concentrated on a regional livability factor. The term livability was perceived as a subjective, highly personalized value system somewhat identified with quality of life.

The purpose of the Army study reported by Rosen and Moghadam (1988) was to investigate the importance of social support in alleviating military life stress, and to define factors that promote the development of social supports. The study also measured quality of life and sought to understand the impact of the military lifestyle on the life quality of military wives. Quality of life was measured globally by a single item in which respondents were asked to rate their satisfaction with life as a whole on a 5-point scale. The instrument used also contained a general affect index, a marital satisfaction scale, and a financial satisfaction scale. Findings from the surveys indicated that several life domains had a significant impact on the life satisfaction of military wives, including military life stress, satisfactions with the husband's unit, and satisfaction with Army life in general. Employment-related variables had an impact on general well-being through role satisfaction. The evaluation of career development prospects for wives seeking careers had a significant impact on general well-being and was more important than actual employment status.

A study of global quality of life among Navy men aboard ships included items in three domains: self, work, and intimate relationships. Among this group, satisfaction with life as a whole could be predicted by higher subjective ratings of health, lower reporting of gastrointestinal symptoms, and perceptions of not being overweight. These three variables accounted for 18 percent of the variance in satisfaction with life as a whole (Conway & Conway, 1988). Also Navy men were less satisfied with their jobs than those respondents in Campbell's national sample, and reported greater satisfaction with self.

DISCUSSION

The emphasis of this report has been on methodology issues related to quality of life assessment, while touching briefly on the findings from previous research in the area. Such a focus was chosen primarily because the major quality of life research efforts are now 10 to 15 years old. During that time, there have been significant political, economic, and societal changes. Because perceived quality of life is partially determined by expectations and involves comparisons with others, changes in the society are expected to be reflected in perceptions of quality of life. For this reason, results of research efforts more than a few years old should not be interpreted as applying to the present in any absolute sense. The body of literature related to quality of life assessments does, however, provide much valuable information about the statistical properties of commonly-used measures and patterns of associations that appear to be relatively stable over time.

As we have seen, there have been few comprehensive assessments of quality of life among military members and their families, even though military samples offer a unique opportunity to expand our understanding of the relationships among objective conditions, personal characteristics, perceptions of life quality, and how those perceptions influence behaviors. However, well-executed quality of life assessments also have practical applications as well as theoretical value. Low quality of life scores are essentially problem statements that can provide valuable insight for military decision makers. Especially in this time of budget reductions within the Department of Defense, information of this type is necessary to assure the most effective allocation of resources. To be sure, there are alternate approaches for assessing needs and obtaining decision-making information, but none that appear to tie together all relevant factors as economically.

The argument has been made that it is time to put aside debates about the use of objective and subjective indicators of quality of life, if for no other reason than the fact that assessments combining the two types of indicators have more practical value for social planners. When considering objective variables as part of a quality of life model applicable to military populations, national socioeconomic measures should be included as well as those specifically related to the military environment. Objective variables of both kinds are likely to be related to perceptions of well-being. Many of the objective conditions of military life--such as frequent moves, family separations, and frequently demanding work schedules and conditions--are thought to be less favorable than typical conditions in civilian life. Whether such conditions are reflected in low scores on SQL measures may depend to a large extent upon current standards of comparison that, in turn, may be related to national socioeconomic variables. If we theorize that a salient standard of comparison for military personnel is an expectation of the conditions they would face as a civilian, then we might expect that quality of life assessments in the military will be more favorable in this recessionary period than when the economy is booming.

The notion of life domains provides a framework for structuring a quality of life assessment instrument. It is important that the domains being assessed should be applicable to a wide spectrum of individuals and comprehensive enough to represent the near total life experience. Fortunately, through the methodical efforts of researchers in the past, there is considerable agreement about which concerns contribute to SQL although the labels assigned to the domains vary somewhat from one researcher to the next. Regardless of the population studied, a comprehensive assessment of quality of life should include perceptions related to the following aspects of life:

- Financial status and standard of living
- Housing
- Health and personal safety
- Marriage/partnership
- Family life
- Relations with relatives
- Relations with friends
- Neighborhood/community
- Leisure and recreation
- Work
- Self-efficacy and personal development
- National issues

Negative perceptions related to certain domains of military life may be somewhat offset by feelings of accomplishment that contribute positively to the domain of self. The majority of research findings show perceptions of self-efficacy to be a domain assessment that strongly influences global measures of life quality as a whole. In the Conway and Conway (1988) study of quality of life among Navy men aboard ship, the respondents reported greater satisfaction with self than did earlier national samples. Complex technological advances have raised the skill level requirements for many military jobs, and it is not unreasonable to assume that the mastery of such skills contributes to positive feelings about oneself.

Research conducted with national samples has strongly indicated that people's assessment of the quality of their lives overall is arrived at by a summation of domain assessments plus global affect and cognition factors. These findings provide an argument for including measures of both types at the domain level and the global level as well. It is likely to be more difficult to develop measures of pure affect that are appropriate to all domains than it will be to design appropriate cognitive items. Nevertheless, such an effort should pay dividends in understanding the process by which individuals arrive at their assessments of quality of life. It is also useful to include, in the assessment instrument, objective (i.e., verifiable) measures related to each domain rather than to rely exclusively on institutional data bases for objective information. Consider the housing domain, for example. In addition to affective items tapping the individual's feelings about his or her current residence and a cognitive comparison to an appropriate standard, we can also solicit objective information, such as the number of rooms in the residence.

Research thus far has provided very little generalizable information about how SQL is related to behaviors and, ultimately, to desired organizational outcomes. Although there has been no scarcity of military research investigating the relationship of various satisfactions to outcomes such as retention, each of these has tended to concentrate on satisfaction with a single aspect or domain of life. The resulting relationships have almost always been weak. More importantly, the relationship between global quality of life and behaviors has seldom been investigated. It is therefore suggested that a two-stage model should be tested, incorporating the ideas that (1) domain assessments are summed to yield a global measure of quality of life and (2) global quality of life leads to behaviors. It is believed that relationships between global quality of life and various behaviors will be stronger and more interpretable than those among domain assessments and behaviors.

The first stage of such a comprehensive two-stage model would provide a way to investigate differences among demographic subgroups regarding the manner by which they combine domain assessments to arrive at perceptions of quality of life as a whole. In particular, differences can be expected to relate to life stage, as predicted by developmental needs theories. Cultural background, career stage, and military tour cycle are other personal characteristics that can be expected to affect the way domain assessments are combined. Another demographic variable that may prove to be crucial to SQL is educational achievement. It is known, for example, that aspiration level influences perceptions of life quality, and that aspiration level is associated with educational level.

Although it is probably not practical to include a full personality assessment in a quality of life instrument, individual differences should not be totally ignored. In particular, it would be useful to measure social desirability bias in responses and the respondent's mood at the time of the assessment.

The fact that few large-scale quality of life assessments have been reported in this country in the last few years does not seem to signal a diminished interest in the concept. Rather, the term 'quality of life' is encountered in conversation and in the media almost daily. Although there may be some question among scholars about how the term should be operationally defined, people generally understand that what is meant is akin to "how are you doing?" overall. The task for social scientists is to understand the factors that influence people's perceptions of how they are doing. What is needed now is a more comprehensive theory that integrates objective conditions, personal characteristics, standards of comparison, subjective assessments, and subsequent behavior. The following recommendations are offered as reasonable steps toward specification of such a model.

RECOMMENDATIONS

The literature summarized in this report provides guidelines for assessing quality of life, and suggests that such an assessment is a feasible approach for gathering the information required by planners. The development of a predictive model that combines perceptions of life quality, personal characteristics, environmental variables, and socioeconomic indicators will allow decision makers to anticipate the support needs of military members and their families, and to utilize resources in a cost-effective manner to address those needs. The following are recommendations for conducting a cyclical quality of life assessment:

- A systematic and recurring assessment of the quality of life of military members and families should be conducted.
- Subjective data should be collected using a self-administered questionnaire.
- The survey sample should be drawn so that respondents are representative of the cultural diversity within the organization.
- Smaller subgroups of interest should be over-sampled to assure that sufficient responses are obtained for comparative analysis.
- Questionnaire items should be written to tap affect, cognition, and cognitive comparisons for each life domain and for life as a whole.

- The following life domains should be assessed: financial status and standard of living, housing, health and personal safety, marriage/partnership, family life, relations with relatives, relations with friends, neighborhood/community, leisure and recreation, work, self-efficacy and personal development, and national issues.
- Items soliciting objectively-verifiable responses should also be included for each domain.
- The assessment instrument should include an abbreviated social desirability scale and a measure of mood.
- Environmental data obtained through alternate methods should be included in development of a predictive model.
- An effort should be made to operationalize multiple measures of behavior and behavioral intentions.
- Data obtained through recurring assessment of SQL should be used to develop and update a predictive model of quality of life needs that is sensitive to changing demographics and conditions.

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